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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/220,821	12/24/1998	J. RICHARD AYLWARD	02103/347001	5571

26161 7590 10/06/2004

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BOSTON, MA 02110

EXAMINER
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LEE, PING

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/220,821

**Applicant(s)**

AYLWARD, J. RICHARD

**Examiner**

Ping Lee

**Art Unit**

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 9-13, 21-23, 35, 37-39 and 43-48 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-34, 36 and 40-42 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6, 8 and 14-20 is/are rejected.
- 7) ☐ Claim(s) 3-5, 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "said speech separator" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim. For examination purpose, the limitation was read as "said separator".

Claim 17 recites the limitation "said first multiple signal paths" in line 2. There is insufficient antecedent basis for this limitation in the claim. For examination purpose, the limitation was read as "said multiple signal paths".

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6, 8, 14, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiraki (US 5,197,100).

Regarding claims 1 and 8, Shiraki discloses a method for processing a single channel audio signal (from 7 in Fig. 1) to provide a plurality of audio-channel signals (output from speakers 1-3), comprising: separating said single channel audio signal (from 7) into a first separated signal (to 11) characterized by a spectral pattern generally characteristic of speech (col. 4, lines 31-32), and a second separated signal (to 12 and 13), processing said first separated signal (by 11) to provide a first audio-channel signal (to 3), and modifying said second separated signal (by 12 and 13) to produce the remainder of said plurality of audio-channel signals (to 1 and 2).

Regarding claim 6, Shiraki shows the left channel signal (from 12) and the right channel signal (from 13).

Regarding claims 14, 18 and 20, Shiraki shows an audio signal processing apparatus for processing a single-channel audio signal (from 7) to provide a plurality of audio channel signals (to speakers 1-3), comprising a separator (after 10 before 11) , for separating said audio signal into a first separated signal (to 11) characterized by a frequency spectrum characteristic of speech (col. 4, lines 31-32), and a second separated signal (to 12 and 13); and a first circuit (12 and 13) coupled to said separator (after 10 before 11) responsive to said second separated signal (from 10) for providing a first subset (to 1 and 2) of said plurality of audio channel signals (to speakers 1-3), coupled to said separator (after 10 before 11).

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 2 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraki in view of Edvardsen (US 4,521,742).

Regarding claims 2 and 16, Shiraki shows an amplifier (17 or 18), but fails to explicitly show a multiplier. The amplifier as taught by Shiraki, mathematically, performs multiplication of the input signal. Edvardsen teaches an amplifier performing multiplication (col. 4, line s 55-56) with improved power handling and long term reliability. Shiraki teaches a system using a general amplifier, wherein one skilled in the art would have expected that any well known amplifier could be used without generating any unexpected result. Thus, it would have been obvious to one of ordinary skill in the art to modify Shiraki's system by using the amplifier as taught in Edvardsen in order to improve amplifier performance and increase the long term reliability.

***Response to Arguments***

7. Applicant's arguments filed 6/16/2004 have been fully considered but they are not persuasive.

Applicant argued, from p. 12-13, that the reference discloses a two-channel audio signal.

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It is noticed that claims 1 and 14 (independent claims) fails to further clearly define what the claimed "a single channel audio signal" is. Shiraki clearly shows that the signal after element 7 is a single channel audio signal, not a two-channel audio signal. The signals input to element 7 is a two-channel audio signal. The signal output from element 7 is a monophonic signal. This output signal reads on the claimed "a single channel audio signal".

Applicant argued that the reference fails to disclose a second separated signal to produce a remainder of a plurality of audio channels called for by claims 1, 6 and 8.

The claimed "a plurality of audio channels" reads on the three output channels from speakers 1-3 in Shiraki. The claimed "a remainder of a plurality of audio channels" reads on the left and right output channels to speakers 1 and 2 in Shiraki. The claimed second separated signal reads on the signal path from 10 to 12 or 13.

Applicant argued that the reference fails to disclose the second separated signal called for by claims 14, 18 and 20.

It is noticed that the claimed "a separator" reads on the junction between 10 and 11 in Shiraki.

Applicant argued that the references fail to show the limitation in claims 2 and 16 because no reference has disclosed the limitation in independent claims 1 and 14.

As discussed above, Shiraki shows each and every limitation in claims 1 and 14. The combination of Shiraki in view of Edvardsen meets the limitations of claims 2 and 16.

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***Allowable Subject Matter***

8. Claims 3-5, and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 15, 17 and 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. Claims 24-34, 36 and 40-42 are allowable over the prior art in the record.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

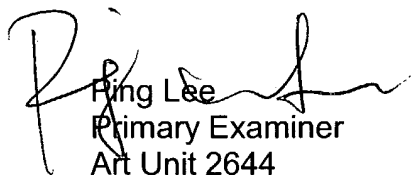
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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 703-305-4865.

The examiner can normally be reached on Monday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Ping Lee  
Primary Examiner  
Art Unit 2644

pwl